

REMARKS

This Amendment, submitted in response to the Office Action dated October 19, 2007, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

I. Summary of Non-Final Office Action

Claims 1-43 are all the claims pending in the application.

Claims 42 and 43 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement.

Claims 1, 2, 4, 6-10, 12, 14-16, 35-36, 38, 40 and 41 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Budnikov (US Pub. 2003/0215013) in view of Park et al. (USP 5,732,386; hereafter "Park"), and in further view of Levine (USP 6,266,644; "Levine"), Li (US Pub. 2003/0187634) and Goodwin (US Pub. 2003/0093282).

Here, Li and Goodwin are relied on as new grounds of rejection in response to Applicant's arguments in the previous Amendment filed on July 26, 2007.

Claims 3, 11 and 37 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Budnikov in view of Park, in further view of Levine, as applied to claims 1, 2, 4, 6-10, 12, 14-16, 35-36, 38, 40 and 41, and in further view of Chen et al. (US Pub. 2003/0115042; hereafter "Chen").

Claims 17-22, 24-31, 33 and 34 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Budnikov in view of Park and in further review of Goodwin and Li.

Claims 23 and 32 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Budnikov in view of Park as applied to claims 17-22, 24-31, 33 and 34, and in further view of Chen.

Claims 5, 13 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form.

II. Analysis of Claim Rejection under 35 U.S.C. § 112

In rejecting claims 42 and 43, the Examiner alleges that using a long complex modified discrete cosine transform (CMDCT) as opposed to a long fast Fourier transform (FFT) is new matter not included in the specification.

Applicant respectfully traverses the rejection.

As recited in the specification, one aspect of the present invention is simultaneous (at the same time) application of long and short windows to an input signal, by which long and short CMDCT spectrums are obtained. In this respect, Applicant amended paragraph 117 of the specification which mistakenly recites “FFT” in place of “CMDCT”, in the previous Amendment filed on July 26, 2007, in which Applicant also explained that the amendment of paragraph 117 is supported by Figs. 7 and 8 (operation 830). The amendment is further supported by paragraph 118 which describes the use of both short and long CMDCT spectrum obtained in operation 830. Note also that the embodiment of Fig. 7 does not include an FFT unit which outputs an FFT spectrum.

Based on the foregoing amendment, and supporting parts of the specification and drawings, claims 42 and 43 were submitted in full compliance with the specification and drawings.

Thus, Applicant respectfully requests withdrawal of the rejection as claims 42 and 43 do not constitute new matter.

III. Analysis of Claim Rejection under 35 U.S.C. § 103(a)

[Claims 1 and 9]

As noted above, the Examiner relies on a new ground of rejection (Goodwin) in alleging that the claimed digital encoding method is obvious. Specifically, performing a psychoacoustic model analysis by using the CMDCT spectrum and FFT spectrum is obvious as Goodwin (paragraph 105) teaches having an MDCT analysis and then taking a transformed signal into a psychoacoustic model analysis (see page 4, lines 11-12 of the office action).

We would traverse the allegation under the following analysis.

An aspect of the claimed encoding method is that the psychoacoustic model analysis is performed by using (both) the generated CMDCT spectrum and FFT spectrum, since if a signal to mask ratio (SMR) is obtained only based on an FFT spectrum in the psychoacoustic model analysis, an optimal encoding result cannot be obtained (see paragraph 18 of the specification).

In this regard, the Examiner appears to allege that:

- (i) Park discloses using MDCT + MDST (modified discrete sine transform) teaches using the generating CMDCT spectrum;
- (ii) Levine teaches generating an FFT spectrum according to the window type;

- (iii) Goodwin teaches having an MDCT analysis and then taking a transformed signal into a psychoacoustic model analysis; and
- (iv) the above three references can be combined with Budnikov to teach or suggest the claimed encoding method.

However, even though Levine is alleged to teach generating an FFT spectrum according to the window type, and Goodwin is alleged to teach performing an MDCT prior to the psychoacoustic model analysis, the claimed method would not have been obvious as long as Budnikov does not teach or suggest applying both the FFT spectrum and CMDCT spectrum to the psychoacoustic model analysis. This is because Budnikov teaches no more than the prior art as shown in Fig. 1 of the present application, in which an MDCT is performed after the psychoacoustic model analysis as opposed to the claimed method.

Moreover, as the psychoacoustic model analysis is performed using both the FFT spectrum and CMDCT spectrum in the claimed method, an encoding result should be different from a result of an encoding which uses only one of an FFT spectrum (Levine) and an MDCT spectrum (Goodwin). In other words, the result from the claimed encoding method would generate an unexpected, unpredictable result compared to each case of using an FFT spectrum and using an MDCT spectrum.

Further, the Examiner's allegation that "... assigning long window frames to the CMDCT and shorter frames to the FFT upon receiving a transient signal..." (page 4, last line to page 5, line 1 of the office action) is only an impermissible hindsight gleaned from the present application (i.e., subject matter of claim 4). This is because Levine only discloses that an FFT is applied to (all) smaller frames which are produced by dividing a long audio frame DCT, and this disclosure does not necessarily teach applying a long window to the CMDCT and a short

window to the FFT. It should be noted here that the “smaller” frames do not correspond to a short window, which could be one of “variable window sizes” described in col. 4, lines 12 of Levine.

In the meantime, when Levine discloses in col. 4, lines 16-20 that “[s]inusoidal transient modeling (“STM”), among other aspects, broadly includes performing a long audio frame discrete cosine transform, dividing the result into smaller frames and then performing an FFT on the smaller frames to produce frequency domain encoded audio”, Levine does not explain what the STM is, but instead simply refers to U.S. patent application Ser. No. 09/007,995 (hereinafter “Levin-2”). However, the STM disclosed in Levine 2 does not generate long window DCT signals and short window FFT signals. Instead, Levine 2 discloses performing a short time frame FFT on the DCT parameters to detect sinusoidal waveforms in the DCT signals (col. 8, lines 57-67 and Fig. 3, step 164). That is, while a long window DCT is applied to signal “s” to generate DCT(s) and a short window FFT is applied to the signal “s” to generate FFT(s), Levine 2 discloses that a long window DCT is applied to a signal “s” to generate DCT(s) and a short window FFT is applied to the DCT(s) to generate FFT(DCT(s)). Thus, Levine and Levine-2 do not disclose using an FFT along with a CMDCT, because these references may at best teach using an FFT on a CMDCT-applied signal even when the CMDCT corresponds to the DCT of Levine, for argument purposes.

At least due to the foregoing reasons, Applicant respectfully submits that the references taken alone or in combination would not have rendered obvious claim 1 and corresponding apparatus claim 9.

[Claims 2 and 10]

These claims should be also allowable at least due to their dependencies.

[Claims 4 and 12]

In rejecting claim 4, the Examiner appears to allege, *inter alia*, that “generating [an] FFT spectrum from the input signal according to the window type” corresponds to long windows for CMDCT and short windows for FFT citing col. 4, lines 15-22 of Levine.

As noted in the above analysis of claim 1, however, the cited part only discloses that an FFT is applied to (all) smaller frames which are produced by dividing a long audio frame DCT, and this disclosure does not necessarily correspond to applying a long window to the CMDCT and a short window to the FFT.

In addition, Levine does not teach a long window for a long CMDCT spectrum and a short window for a short FFT is determined “*if the window type determined in step (a) is a long window*” as recited in the claim. Levine only discloses that “selected source audio frequency bands are matched to corresponding window sizes”, and this disclosure is not sufficient to teach the foregoing specific condition of the claim.

Accordingly, claim 4 and corresponding apparatus claim 12 would not have been obvious over the references.

[Claims 6-8 and 14-16]

These claims should also be allowable at least due to their dependencies.

[Claims 35, 36, 38, 40 and 41]

These claims should be patentable for the same reasoning in the analyses of claims 1, 2, 4, 6 and 7.

[Claims 3, 11 and 37]

These claims should be allowable at least due to their dependencies.

[Claims 17 and 26]

The Examiner rejects claim 17 based on the same allegation for the claim 1 rejection. In particular, the claim is obvious because Goodwin teaches performing a psychoacoustic model analysis by using the CMDCT spectrum.

As claims 17 and 26 are amended in this Amendment by incorporating claims 18 and 42, Applicant respectfully submits that the claimed method and corresponding apparatus should be allowable as Budnikov fails to teach that the CMDCT by applying the long window and the CMDCT by applying the short window are performed at the same time, and this deficiency of Budnikov is not cured by other references as cited by the Examiner.

[Claims 18 and 27]

These claims are canceled as they are incorporated into claims 17 and 26 as amended.

[Claims 19-25 and 28-34]

These claims should be allowable at least due to their dependencies.

[Claims 42 and 43]

These claims are canceled as they are incorporated into claims 17 and 26 as amended.

IV. Allowable Claims

Applicant respectfully requests that the Examiner hold the rewriting of allowable claims 5, 13 and 39 in abeyance until the arguments presented with respect to rejected claims have been reconsidered.

V. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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